Some Results about the Aging Impact on Delay PUFs

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In this talk, we present results concerning the aging of Physically Unclonable Function (PUF) based on delays. The Targeted PUFs are arbiter PUF and Loop PUF [1]. Experiments have been done at simulation level with an open-cell 45 nm technology and at silicon level with a 65nm technology. The aging has been accelerated in order to analyze the impact after a few years. It is shown that the NBTI aging source prevails, as expected, and that the arbiter PUF is particularly sensitive to aging compared to Loop PUF which is not greatly impacted. These results allow the PUF designers to anticipate the aging impacts and possibly add anti-aging structures or extra reliability enhancement.

References

[1] Zouha Cherif, Jean-Luc Danger, Sylvain Guilley, and Lilian Bossuet. An easy-to-design PUF based on a single oscillator: The loop PUF. In *15th Euromicro Conference on Digital System Design, DSD 2012, Çeşme, Izmir, Turkey, September 5-8, 2012*, pages 156–162. IEEE Computer Society, 2012.